

PROJECTOR

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DRIFT SIGHT TEST PROGRAM A

Purpose:

To establish accuracy of Hand Control tracking rate in itself and as a system using reworked Hand Control.

General Method:

The accuracy of the Hand Control as an individual item will be tested on the ground using the traveling target (bug) in existence at the Ranch. Operators will be trained in the operating procedure at this time.

Upon completion of ground tests the unit will be installed in a vehicle and flight tested.

Equipment Required:

1. Vehicle with periscope (Drift Sight) installed.
2. A2 Configuration (vertical camera only).
 - a.) 250' film in vertical camera
 - b.) 500' Tracking Camera film
 - c.) Red filter on 24" f/8
 - d.) Yellow filter on Tracking Camera
3. Century recorder connected to tracking rate potentiometer of Hand Control, with timing channel and shutter pulse channel activated.
4. Pilot trained in operational use of Drift Sight and Hand Control.
5. Reworked Hand Control as supplied by manufacturer.
6. Installation and boreighting of Hand Control by manufacturer's representative.

Conditions of test:

Duration: 2 hours. One hour at each altitude.
Flight plan: Over cloudless area between 9 a.m. and noon local time.
Altitude: K plus 10 and K plus maximum.

Pilot Briefing:

1. Turn on Tracking Camera at takeoff.
2. After reaching altitude select area clear of clouds.
3. Turn on autopilot.
4. Maintaining straight and level flight (at altitude of K plus 10), on a down or up wind course set tracking rate of Hand Control as taught previously. Make sure Drift knob at 0 and that Drift is zero.
5. Turn on configuration camera.
6. Fly straight and level course for minimum of three minutes after tracking rate set.
7. Turn off configuration cameras after three minutes.
8. Record: IAS, altimeter, track knob setting, course (compass), time, Drift.

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9. Repeat steps 3 thru 7 thrice over any other heading which is free of clouds. Set Drift Scale and Drift knob to correct for any drift encountered.
10. Go to maximum altitude and repeat steps 3 thru 8.

Preflight Conditions:

1. Load vertical camera of A2 configurations with minimum of 250 ft. film.
2. Load Tracking Camera and set exposure and scan interval per instructions established at loading time.
3. Use red filter on 24" f/8 camera.
4. Use 500' roll of 70 mm. film in Tracking Camera.
5. Make sure clocks in 24" f/8 camera and Tracking Camera are synchronized, set, wound and marked. Synchronize with pilots' cockpit clock.
6. Ensure that recorder and timing generator installed, connected and functioning.
7. Perform standard preflight checkout.

Post Flight Conditions:

1. Perform standard post flight checkout.
2. Process film from A2 vertical camera and from Tracking Camera.
3. Unload recorder record.

Analysis:

From 24" f/8 camera select two frames which show same object in each frame. Compute time interval between frames from clock data recorded on frame. Compute $IMC \text{ rate} (V/H \text{ rate})$ from knowledge of KFL of taking lens, distance ground object moved between frames and time it took to move this distance. NOTE: OBJECT MUST BE ON GROUND TRACK OF VEHICLE. Use Tracking Camera film for same analysis.

Compare V/H computed rate with rate record from rate potentiometer on Century recorder paper. Make sure time of occurrence same as time negatives exposed. Any discrepancy between two records is the error in setting the tracking rate. Accuracy desired is $\pm .3$ milliradians per second. If error less than this entire system satisfactory. If error greater examine the following sources of possible error:

- a.) In proper setting by operator.
- b.) Malfunctioning of autopilot.
- c.) Excessive roll, pitch or yaw of vehicle (consult pilot).
- d.) Malfunctioning of Hand Control, improper boresighting.



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